

ABSTRACT

A novel battery with a venting device and overcharge protection system. The battery casing has an inner tube that completely surrounds a hollow core, an outer tube that surrounds the inner tube, and end plates. The inner tube is welded at its ends to two end plates. The inner tube, outer tube, and end plates form a sealed, hermetic annular space in which the battery components are held. The inner tube is designed to collapse into the hollow core when a pressure inside the annular space exceeds a predetermined collapsing pressure, and the welds connecting the inner tube to the end plates are designed to break when the pressure inside the annular space exceeds a predetermined breaking pressure. In addition, the invention can take advantage of the fact that the inner tube is negatively charged by have a connecting member, which is electrically connected to the anode and thus positively charged, that extends into the hollow core. When the negatively charged inner tube collapses, it makes contact with the positively charged connecting member, to provide a short circuit for reducing the voltage of the battery.